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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/388,567	09/02/1999	HOWARD E. RHODES	303.593US1	4170

7590 09/11/2002  
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH  
ATTEN: DANNY J. PADYS  
P.O. BOX 2938  
MINNEAPOLIS, MN 55402

EXAMINER

MITCHELL, JAMES M

ART UNIT PAPER NUMBER

2827

DATE MAILED: 09/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/388,567

Applicant(s)

RHODES, HOWARD E.

Examiner

James Mitchell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 and 23-60 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 23-60 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

**DETAILED ACTION**

***Election***

1. Applicant's election without traverse of group 1, Claims 1-17 and 23-60 in Paper No. 8 is acknowledged.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear as to the structural relationship between the interconnect and "second number of metal layers."

4. Claims 2 and 3 have not been rejected over the prior art because, in light of the 35 U.S.C. 112 rejections supra, there is a great deal of confusion and uncertainty as to the proper interpretation of the limitations of the claims; hence, it would not be proper to reject the claims on the basis of prior art. As stated in *In re Steele*, 305 F.2d 859, 134 USPQ 292 (CCPA 1962), a rejection should not be based on considerable speculation about the meaning of terms employed in a claim or assumptions that must be made as to the scope of the claims. See also MPEP 2173.06.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
7. Claim 1-9, 11, 14-17, 23-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Givens (U.S. 2001/0045654).
8. Givens (Fig 1, 2) discloses an interconnect (Abstract) comprising a trench (20) having a depth and a width, both the depth and width being greater than the critical depth and width, and a number of metal stack layers (24, 26, 28, 30) above the trench; an aluminum second trench (32; Par. 0027, Lines 2-3) having a depth of the first trench and a width greater than twice the first sidewall thickness and less than twice the sum of the first sidewall and second sidewall thickness, with a first metal layer (24) above the first trench and the second trench, and a second metal layer (26) above the second narrow trench; wherein at least one of the plurality of layers (26) is coupled to the metal layer (28) of the trench; a refractory or tantalum nitride barrier metal layer (24; Par. 0010, Lines 8-11) and the interconnect metal layer copper or aluminum (Page 5, RT. Claim 17).

9. Although Givens does not appear to explicitly teach the process limitations of “determining the number of metal layers by the width, the number of metal layers being a function of the width and the critical width or planarization by chemical etching or depositing,” the product of Givens inherently possesses the structural characteristics imparted by the process limitation. See *In re Fitzgerald, Sanders, and Bagheri*, 205 USPQ 594 (CCPA 1980).

10. With respect to claims 7 and 8, it has been held that an element is “capable of” performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138.

11. With respect to claims 14, 26, 30-32, 34-36, 38, 40-43, 51-54 and 56 the prior art discloses the claimed invention except for a metal layer of Al-Cu, aluminum coupled to copper, wherein the aluminum is an alloy or the interconnect being gold, or aluminum alloy comprising Al-Si-CU. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a first and second metal layer of copper and aluminum, since it has been held to be within the general skill of a worker in the art to select known material on the basis of its suitability for the intended use as a matter of design choice. *In re Leshin*, 125 USPQ 416 (1960).

12. Claims 24, 25, 29, 55 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Givens as applied to claim 23, 26, 54 and 59.

13. The prior art does not explicitly disclose a wire bond, but examiner takes official notice that it would have been obvious to one of ordinary skill in the art at the time the

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invention was made to incorporate a wirebond in order to form an electrical connection (communication) between various devices.

14. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Givens as applied to claim 8 and further in combination with Yost.

15. Givens does not explicitly disclose that one of the number of metal stack layers couples a first logic device to a second logic device or in the alternative a first and second memory cell, however Yost utilizes either a first and second logic or memory cell coupled by an interconnect (Column 2, Line 20; Column 6, Lines 31-36).

16. It would have been obvious to one of ordinary skill in the art to incorporate the interconnect of Yost with the logic interconnect structure of Yost in order to form an interconnect free form voids as taught by Givens (Paragraph 0007).

### ***Conclusion***

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

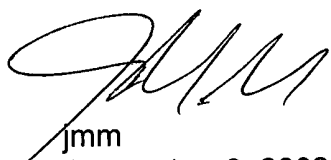
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3230 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
jmm  
September 9, 2002

  
ALBERT W. PALADINI  
PRIMARY EXAMINER